



Kampweg 5
P.O. Box 23
3769 ZG Soesterberg
The Netherlands

www.tno.nl

T +31 346 35 62 11

F +31 346 35 39 77

Info-DenV@tno.nl

TNO report

TNO-DV 2008 A513

**Cultural diversity in military teams:
Which factors influence effectiveness?**

Date	December 2008
Author(s)	Dr I.M. Wetzer Dr D.A. van Hemert
Classification report	Ongerubriceerd
Classified by	A. Pieterse, MSc
Classification date	2 December 2008
Title	Ongerubriceerd
Managementuittreksel	Ongerubriceerd
Abstract	Ongerubriceerd
Report text	Ongerubriceerd
Copy no	7
No. of copies	18
Number of pages	20 (excl. RDP & distribution list)
Number of appendices	-

The classification designation Ongerubriceerd is equivalent to Unclassified, Stg. Confidencieel is equivalent to Confidential and Stg. Geheim is equivalent to Secret.

All rights reserved. No part of this report may be reproduced in any form by print, photoprint, microfilm or any other means without the previous written permission from TNO.

All information which is classified according to Dutch regulations shall be treated by the recipient in the same way as classified information of corresponding value in his own country. No part of this information will be disclosed to any third party.

In case this report was drafted on instructions from the Ministry of Defence the rights and obligations of the principal and TNO are subject to the standard conditions for research and development instructions, established by the Ministry of Defence and TNO, if these conditions are declared applicable, or the relevant agreement concluded between the contracting parties.

© 2008 TNO

20090213221

AQ F09-05-01887

Culturele diversiteit in militaire teams: Welke factoren beïnvloeden effectiviteit?

In dit onderzoek werd onderzocht of culturele diversiteit in een militair team invloed heeft op de effectiviteit van het team.



Probleemstelling

Militairen werken geregeld in teams die bestaan uit leden van verschillende culturen. Hierdoor moeten militairen omgaan met culturele verschillen binnen hun team. Deze culturele verschillen kunnen tot uiting komen in bijvoorbeeld verschillende

waarden en normen, of verschillende religies. In het huidige onderzoek is gekeken of culturele diversiteit in militaire teams invloed heeft op de effectiviteit van deze teams. Hierbij is ook gekeken naar de invloed van teamfactoren zoals leiderschap, betrokkenheid en sociale steun.

Beschrijving van de werkzaamheden

Via een e-mail zijn Nederlandse militairen die op dat moment waren uitgezonden in een multinationalaal team benaderd met de vraag of zij deel wilden nemen aan het onderzoek middels het invullen van een online vragenlijst. Tevens werd hen gevraagd de mail door te sturen naar teamgenoten, waardoor de steekproef bestond uit militairen van verschillende nationaliteiten. In totaal hebben 89 militairen de vragenlijst ingevuld. In deze vragenlijst werd gevraagd naar verschillende maten van culturele diversiteit (zoals diversiteit in nationaliteit, in religie, en in normen en waarden), naar teamfactoren zoals leiderschapsstijl en sociale steun, en naar teamuitkomsten zoals effectiviteit.

Resultaten en conclusies

Uit de analyses blijkt dat er geen effecten waren van diversiteit in nationaliteit of waarden zoals individualisme, collectivisme, machtsafstand en onzekerheidsvermijding op teamfactoren of teamuitkomsten. Religieuze diversiteit was echter wel positief gerelateerd aan teamuitkomsten, maar niet nadat er gecontroleerd werd voor relatiegericht leiderschap. De conclusie is dat culturele diversiteit niet relevant is voor de effectiviteit van een team, maar religieuze

diversiteit wel; een religieus divers team presteert beter dan een homogeen team. Dit effect kan echter gecompenseerd worden door leiderschapstijl die gericht is op het bestendigen van relaties binnen het team.

Toepasbaarheid

Het inzicht uit dit onderzoek is heel relevant voor de Krijgsmacht. Met regelmaat worden militairen uitgezonden naar teams die uit leden van verschillende culturen bestaat. Dit onderzoek laat zien dat deze multiculturele teamsamenstelling geen nadelig effect heeft op de effectiviteit van de teams.

PROGRAMMA	PROJECT
Programmabegeleider P.J. Keuning, DR&D	Projectbegeleider drs. A. Pieterse, Gedragswetenschappen, Defensie
Programmaleider dr. E.F.W. Bleeker, TNO Defensie en Veiligheid	Projectleider dr. I.M. Wetzter, TNO Defensie en Veiligheid
Programmatitel Algemene ondersteuning en bijzondere projecten	Projecttitel Cultuur
Programmanummer V650	Projectnummer 032.13401
Programmaplanning Start 01 januari 2006 Gereed 31 december 2009	Projectplanning Start 01 januari 2008 Gereed 31 december 2008
Frequentie van overleg Met de programma/projectbegeleider werd regelmatig gesproken over de invulling en de voortgang van het onderzoek.	Projectteam dr. I.M. Wetzter dr. D.A. van Hemert

Contact en rapportinformatie

Kampweg 5
Postbus 23
3769 ZG Soesterberg

T +31 346 35 62 11
F +31 346 35 39 77

Info-DenV@tno.nl

TNO-rapportnummer
TNO-DV 2008 A513

Opdrachtnummer
-

Datum
december 2008

Auteur(s)
dr. I.M. Wetzter
dr. D.A. van Hemert

Rubricering rapport
Ongerubriceerd

Samenvatting

In dit onderzoek hebben wij het effect onderzocht van culturele diversiteit op uitkomsten van militaire teams. Hierbij is rekening gehouden met verschillende conceptualisaties van cultuur en met team factoren zoals betrokkenheid. Wij hebben dit gedaan door respondenten te vragen naar de diversiteit binnen hun team in termen van nationaliteit, waarden en religie. We vonden geen effecten van diversiteit in nationaliteit of waarden zoals individualisme, collectivisme, machtsafstand en onzekerheidsvermijding op team factoren of team uitkomsten. Religieuze diversiteit was echter wel positief gerelateerd aan team uitkomsten, maar niet nadat er gecontroleerd werd voor relatiegericht leiderschap. De conclusie is dat culturele diversiteit niet gerelateerd is aan team effectiviteit, behalve wanneer het wordt gemeten als religieuze diversiteit. Deze laatste relatie is echter zo zwak dat zij verdwijnt als wordt gecorrigeerd voor leiderschapsstijl.

Summary

In this study we tested the effect of cultural diversity on outcomes in military teams, taking into account different conceptualizations of culture in addition to team factors such as involvement. We asked respondents to indicate the diversity in their teams in terms of nationality, values and religion. We found no effects of diversity in nationality or values such as individualism, collectivism, power distance, and uncertainty avoidance on any of the team factors or team outcome. However, religious diversity was positively related to team outcomes, but not after controlling for relationship-related leadership. The conclusion is that cultural diversity is not related to team effectiveness, except when it is measured as religious diversity. This latter relationship is so weak however, that it disappears when it is corrected for leadership style.

Contents

	Managementuittreksel	2
	Samenvatting.....	4
	Summary	5
1	Introduction	7
1.1	Effects of Cultural Diversity on Team Outcomes.....	7
1.2	Explanations for the Discrepancy in Findings	8
1.3	The Present Study	9
2	Method.....	10
2.1	Participants and Teams	10
2.2	Measures.....	11
3	Results	13
4	Discussion	17
5	References	18
6	Signature	20

1 Introduction

International military teams are a reality in today's world. Military missions such as the ones in Bosnia and Afghanistan are mostly joint missions, which include different military forces, as well as combined missions, which include collaborating nations. Hence military personnel have to deal with cultural differences within their teams. Cultural diversity may be reflected in values and norms, traditions, communication styles, and different expectations of leadership. Importantly, cultural diversity could lead to problems in terms of team satisfaction and team performance. Some studies have addressed the impact of cultural diversity on team outcomes, but only few studies have focused on international military teams. In this study we test the effect of cultural diversity on outcomes in military teams, taking into account different conceptualizations of culture in addition to team factors such as involvement.

1.1 Effects of Cultural Diversity on Team Outcomes

Literature is undecided on the effects of cultural diversity in teams; positive as well as negative effects and no effects have been reported. Based on Allport's (1954) intergroup contact theory, positive effects of intercultural contact may occur under certain conditions, leading to better performance and more satisfaction. Watson, Johnson, and Zgourides (2002) compared ethnically diverse and non-diverse teams of students and found the former to show higher performance in terms of objective ratings of evaluators, but only after 15 weeks. Watson, Kumar, and Michaelsen (1993) did a similar study and found that after five weeks homogenous teams performed better on all included measures, whereas after four months heterogeneous teams scored better on the range of perspectives taken and the number of alternative solutions that were generated; no differences were found after four months for the other measures. Knouse and Dansby (1999) performed team diversity research in a military setting. They operationalized diversity in terms of ethnic minority as well as gender and persons with disabilities and found a positive effect of gender and minority diversity on perceived team effectiveness, but only at the 11-30% level.

In contrast, social identity theory would lead one to expect negative effects of diverse teams as people tend to categorize people into groups, identify with their own group, and favor this ingroup. Also, Vecchio and Brazil (2007) mention similarity attraction as a determining mechanism in better performing non-diverse groups. Indeed, several researchers presented evidence for the idea that diverse groups are less cohesive and perform worse. For example, Thomas (1999) showed in an experimental study that culturally diverse groups had lower performance on five group tasks than culturally homogenous groups. Van der Zee, Atsma, and Brodbeck (2004) found that diverse teams reported less well-being, but they did not find effects for commitment and performance. An example of a study reporting no significant effects either way is a previous study by TNO [De Bruin & Van Geel, 2006], which tested a series of hypotheses with regard to cultural diversity within military teams and concluded that 'cultural differences in a team do not seem to be obstructing or enhancing team functioning'.

1.2 Explanations for the Discrepancy in Findings

The discrepancy in these findings on effects of cultural diversity can be explained in at least four different ways.

- First, *the time a team has been working together* appears to be an important factor in the results: Whereas diverse teams might have problems in the beginning, beneficial effects of the cultural diversity might surface after some time. Watson and colleagues (1993, 2002) demonstrated in a series of studies that better team project performance was shown by diverse than non-diverse teams after a few months of working together, but no difference between diverse and non-diverse teams after a few weeks. Also, Moelker, Soeters, and Vom Hagen (2007) analyzed survey data from German and Dutch military personnel working in a binational corps. Across 10 years, mutual feelings of sympathy had increased, although prejudices were still intact.
- Second, Early and Mosakowski (2000) suggested that the *dichotomy of diverse versus non-diverse teams is too simple* (see also Thomas, 1999). They presented a curvilinear relation between diversity and outcome, arguing that a team consisting of many nationalities might develop a team culture of its own, whereas a two-nation team could result in polarization. Even more, conceptualizing culture as ethnic background, as the majority of studies do, could be considered as a restricted way of studying diversity. To start, it does not identify exactly which aspects of culture are responsible for the observed effects: Different values, different religions, and different traditions and conventions could all be relevant. Therefore, explaining differences between countries or ethnic groups just by referring to their culture does not provide useful information about the mechanisms that are at play. As Knouse and Dansby (1999) put it, it is important to strive for 'some overall measure of diversity, incorporating physical aspects of diversity as well as differences in ability and psychological differences' (p. 492).
- A third reason why results on team diversity vary might be that studies differ considerably in the way they *measure team factors and team outcomes* [Ahronson & Eberman, 2001].
- Finally, *mediating variables* such as personality [Van der Zee et al., 2004] and team factors such as involvement and leadership styles might explain the variety in findings. For example, a mediating variable is leadership. Leadership styles have been an important topic of study in military psychology because of their obvious relevance in life-and-death situations [Ahronson & Eberman, 2002]. In 1964, Blake and Mouton presented the Managerial Grid, a simplified model of leaders' behavior consisting of two dimensions: A concern for people and a concern for the task. This distinction between task-related and relationship-related leadership skills appeared to be a fruitful and universally valid one [Shiraev & Levy, 2007]. Several researchers have argued that leaders in culturally diverse teams need to focus more on interpersonal issues than leaders in non-diverse teams, as more personal differences call for attention. For example, Watson et al. (2002) studied relationship-related leadership versus task-related leadership in their study of diverse learning teams. They found that diverse groups showed more interpersonal leadership, whereas non-diverse groups showed more task-related leadership, especially in the early stages of the team.

1.3 The Present Study

In this study we focus on the effect of cultural diversity on team effectiveness as perceived by military personnel from a number of different countries. First, we introduce a new way to conceptualize and measure cultural diversity in which we ask respondents to indicate the diversity in their teams in terms of nationality, but also in terms of their values, taking Hofstede's (1980, 2001) value dimensions as a starting point. We test which conceptualization of culture is most useful within the context of military teams and propose another type of diversity. Second, we examine the effects of leadership styles and team factors such as involvement and social support as potential mediating factors in the relationship between team diversity and effectiveness.

2 Method

2.1 Participants and Teams

2.1.1 *Participants*

In order to collect the data for this research, we tried to contact soldiers who were working in a multinational team at the time of completing the questionnaire. The department Behavioral Sciences of the Dutch Defence Organisation provided a list of 1045 names of soldiers who belonged to the target audience. These people received an e-mail in which the purpose of the study was explained and that contained a link to the online questionnaire they were asked to complete. Participants were also requested to forward the link to other members of their teams, to create a snowball effect. Participation was voluntary. Of the 1045 e-mails sent, 21 mail delivery failures were received back. Six weeks later, the target audience received a reminder. After two months, 89 soldiers filled in the questionnaire, a response rate of 8.7%.

The majority of participants were male ($N = 85$). Their age ranged from 25 to 55 years with a mean age of 46 years. The participants had on average been deployed to a country other than their own for 6.5 times, their current deployment not included. On average, they were in their teams for 1 year and 8 months at the time of the completion of their questionnaire. Thirty-nine participants were from the army, 23 from the navy, 19 from air force, 2 marines and 6 military police. We also asked the participants to report whether they were the team leader or a co-worker in the team. Twenty-one participants appeared to be their team's leader, the rest of the participants ($N = 68$) were co-workers in their teams.

2.1.2 *Teams*

All participants answered some questions about the team they were working in. Each participant thus worked in one team, and various participants could be working for the same team. The teams in which the participants were deployed were of various natures (e.g., headquarters and NATO schools), located in 15 countries (e.g., the United States of America, Germany, and Lebanon), and working for various organizations (e.g., United Nations and NATO). Half of the teams had existed more than six years, with a minimum of several months and a maximum of over 40 years. About half of the participants were working in their team for more than two years at time of completion. The teams consisted on average of 14 persons (not including the 5% of extreme outliers and of 7.2 nationalities ($SD = 6.2$)). Twelve participants worked in a project team, the remaining 77 worked in a structural team. Twenty-two participants reported that their team was an operational team, and 67 participants reported to work in a staff team. More than half of the participants ($N = 51$) worked in a team at component command level, ten participants at army or army corps level, 11 at brigade or division level, 9 at regiment or battalion level, and 8 at platoon level.

2.2 Measures

2.2.1 Demographics

The questionnaire started with demographic questions about the participant (such as age, gender, nationality, and rank). Next, demographic variables of the team the participants were working for were assessed (such as team age, number of team members, number of nationalities, via open-ended questions).

2.2.2 Team diversity

Team diversity was measured in two different ways: First, we measured whether people perceived their team as diverse with regard to nationality, and with regard to religion, in two separate questions ('How diverse is your team with regard to nationality/religion?'). Second, we measured team diversity with regard to the five Hofstede (1980, 2001) value dimensions individualism versus collectivism, power distance, masculinity versus femininity, uncertainty reduction, and long term versus short term focus. Hofstede formulated these dimensions as a way to understanding national differences in work-related values. Individualism versus collectivism indicates the extent to which individuals are seen as autonomous or part of a group and power distance indicates the extent to which there is inequality (hierarchy) between supervisors and subordinates. In masculine cultures gender differences in roles are larger and focus is more on masculine values such as ambition, whereas in feminine cultures gender differences in roles are smaller and focus is more on feminine values such as nurturing. Uncertainty avoidance indicates a lack of tolerance for ambiguity and a need for formal rules. Finally, long term versus short term focus indicates a focus on perseverance versus respect for tradition, fulfilling social obligations, and protecting one's 'face'. Each of these dimensions was assessed with three items that were adapted from Van Amelsfoort and Van Vliet (2004) (see Table 1). For each item, participants indicated on a 5-point scale to what extent their team was diverse with respect to that particular item (1 = not at all, 2 = slightly, 3 = somewhat, 4 = moderately, 5 = very).

Table 1 Items Measuring Hofstede's Five Dimensions.

Items Measuring Hofstede's Five Dimensions
<p>Power distance ($\alpha = .78$)</p> <p>The extent to which people accept that not everybody has the same amount of power.</p> <p>The extent to which less powerful people accept their superiors.</p> <p>The extent to which people expect power to be distributed unequally.</p>
<p>Masculinity/femininity ($\alpha = .67$)</p> <p>The extent to which members think that men and women have different roles.</p> <p>The extent to which members think that both men and women should be focused on the quality of life.</p> <p>The distinction members make between roles for men and women.</p>
<p>Individualism/collectivism ($\alpha = .53$)</p> <p>The extent to which people only care about themselves and their family.</p> <p>The extent to which people are focused on the social groups people belong to.</p> <p>The extent to which people identify themselves with actions of group members.</p>
<p>Uncertainty reduction ($\alpha = .81$)</p> <p>The extent to which members feel threatened by uncertain situations.</p> <p>The need to reduce uncertainty.</p> <p>The tension members feel in unknown situations.</p>
<p>Long term versus short term ($\alpha = .72$)</p> <p>The extent to which members are focused on the long term.</p> <p>The value members attach to traditions.</p> <p>The extent to which members are focused on the future (as opposed to the past).</p>

2.2.3 *Leadership*

Relationship-related leadership was measured by the three items 'The leader of our team takes the feelings of my team members into account', 'The leader of our team goes along well with the team members', and 'The leader of our team treats the team members as equal' ($\alpha = 0.79$). Task-related leadership was measured by the items 'The leader of our team is purposeful in his/her performance', 'The leader of our team emphasizes speed and results', and 'If necessary, the leader of our team acts quick and powerful' ($\alpha = 0.86$).

2.2.4 *Team factors*

Team factors social support and involvement were each measured with three items adopted from literature [see Wetzer, Zeelenberg, and Pieters, 2007]. In some cases, the items were slightly adapted in order to make them more applicable to the specific situation of teams. For each item, the participants indicated to what extent they agreed with it, on a scale from 1 (*totally disagree*) to 5 (*totally agree*). Social support was measured by the items 'I feel comforted by my team members', 'I have the feeling that my team members understand me', and 'My team members give me a feeling of sympathy' ($\alpha = 0.84$). Involvement was measured by the items 'I feel involved with the team', 'I feel connected with my team members', and 'I make efforts for this team' ($\alpha = 0.84$).

2.2.5 *Team outcomes*

The measurement of satisfaction was based on work satisfaction research by Spector (1997); it consisted of the following three items (Cronbach's $\alpha = 0.89$): 'I think it is very interesting to work for this team', 'I like working in this team', and 'Working in this team gives satisfaction'. The effectiveness scale was a measure of subjective effectiveness and consisted of the three items 'The performance of the team exceeds expectations', 'The team operates effectively', 'Our team does a good job' ($\alpha = 0.78$) and was inspired by the Job Descriptive Index by Smith, Kendall, and Hulin (1969).

3 Results

The descriptives of all variables of this study are presented in Table 2. The correlations between the team factors and the team outcomes are presented in Table 3.

Table 2 Descriptives of Independent and Dependent Variables.

Variable	M	SD
<i>Diversity measures</i>		
Religion	2.89	1.16
Nationality	4.13	1.11
Long versus short term (Hofstede)	2.99	0.84
Masculinity / femininity (Hofstede)	2.22	0.88
Uncertainty reduction (Hofstede)	2.51	0.87
Individualism / collectivism (Hofstede)	2.75	0.80
Power distance (Hofstede)	3.24	1.13
<i>Leadership</i>		
Relationship-related leadership	3.74	0.75
Task-related leadership	3.51	0.81
<i>Team factors</i>		
Involvement	4.07	0.62
Social Support	3.99	0.47
<i>Team outcomes</i>		
Satisfaction	4.09	0.67
Effectiveness	3.45	0.60

Note. Each variable was measured by three items on a scale from 1 to 5, except for diversity in religion and nationality, which were both measured by a single item (how diverse is your team with regard to religion/nationality, on a scale from 1 (not diverse at all) to 5 (very diverse)).

Table 3 Correlations between team factors and team outcomes.

Variable	R-r leader	T-r leader	Involv	Soc supp	Satisf	Effectiv
R-r leadership	-	0.54**	0.55**	0.56**	0.46**	0.42**
T-r leadership	-	-	0.42**	0.32**	0.20	0.32**
Involvement	-	-	-	0.63**	0.48**	0.57**
Soc support	-	-	-	-	0.48**	0.57**
Satisfaction	-	-	-	-	-	0.67**
Effectiveness	-	-	-	-	-	-

Note. ** means that a correlation is significant at the .01 level (2-tailed).

3.1.1 The Role of Diversity

Cultural diversity is a complex construct that can manifest in various ways. When a culturally diverse team performs better or worse than a team that is less culturally diverse, which specific aspect accounts for these differences? In other words, is cultural diversity mainly reflected in the different values and norms that team members have, in their difference in nationality, or in their difference in religion?

First, we tested the question whether the effectiveness of teams is predicted by diversity in nationality, by diversity in cultural norms and values (Hofstede's dimensions), and by team factors (social support and involvement). This was tested by means of a regression analysis in which these variables were entered stepwise, resulting in three models for each of which the increase in explained variance is tested. As can be seen in Table 4, the first model showed that diversity in nationality is not a significant predictor

of team effectiveness. In other words, team effectiveness can not be explained by the number of different nationalities that the team consists of. In addition, Hofstede's dimensions did not predict team effectiveness either, which indicates that it is not the diversity in norms and values among team members that affects effectiveness. However, explained variance significantly increased when the team factors involvement and social support were added to the model. This shows that in multinational teams not diversity in nationality or in norms and values predict effectiveness, but rather the extent to which people feel involved and supported.

Table 4 Stepwise regression analysis on team effectiveness.

Model	R ²	F Change	df1	df2	p
1 (nationality)	0.000	0.027	1	64	0.87.?
2 (Model 1 + Hofstede)	0.070	0.879	5	59	0.501
3 (Model 2 + team factors)	0.437	18.562	2	57	0.000

Note. The team factors in Model 3 are involvement and social support.

In order to test more specifically which of the different operationalizations of cultural diversity was related to team effectiveness, seven univariate regression analyses were conducted. The dependent variable in each analysis was effectiveness and the independent variables tested were the various measures of cultural diversity (each of the Hofstede dimensions to test the impact of differences in norms and values and diversity with regard to nationality) and diversity with regard to religion. As can be seen in Table 5, none of the five Hofstede dimensions was a significant predictor of effectiveness. In addition, difference with regard to nationality was not a significant predictor of effectiveness either. The only independent variable that was significantly related to effectiveness was diversity with regard to religion. These findings suggest that not the variety in nationalities or in norms and values account for outcomes of culturally diverse teams, but the variety in religion does. Therefore, the following analyses include religious diversity.

Table 5 Univariate Regression Analyses on Team Effectiveness.

Dependent var	Unstand. coeff	SE	β	p
Long vs short term	0.117	0.087	0.166	0.182
Masculinity/femininity	0.041	0.091	0.056	0.657
Uncertainty reduction	-0.072	0.086	-0.104	0.405
Individualism/collectivism	-0.097	0.095	-0.126	0.313
Power distance	-0.008	0.067	-0.015	0.906
Diversity in religion	0.122	0.063	0.236	0.057
Diversity in nationality	0.011	0.065	0.021	0.870

3.1.2 A Model of Effectiveness of Multinational Teams

To investigate how diversity in religion within a team is related to team effectiveness, we first tested whether diversity in religion is related to specific leadership styles. A univariate regression analysis showed that diversity in religion is a significant predictor of relationship-related leadership (unstandardized regression coefficient = 0.169, SE = 0.078, β = 0.262, t = 2.17, p < 0.05). In addition, no relationship was found between diversity in religion and task-related leadership (unstandardized regression coefficient = 0.067, SE = 0.088, β = 0.095, t = 0.762, ns).

Next, we explored how relationship-related leadership was related to the team factors involvement and social support. Regression analyses showed a significant relationship

for both team factors: relationship-related leadership was a significant predictor of both involvement (unstandardized regression coefficient = 0.460, $SE = 0.087$, $\beta = 0.551$, $t = 5.28$, $p < 0.001$) and social support (unstandardized regression coefficient = 0.355, $SE = 0.065$, $\beta = 0.561$, $t = 5.43$, $p < 0.001$).

That these team factors in turn predict satisfaction was confirmed by two more tests, which showed positive relationships between satisfaction and involvement (unstandardized regression coefficient = 0.649, $SE = 0.107$, $\beta = 0.606$, $t = 6.09$, $p < 0.001$) and satisfaction and social support (unstandardized regression coefficient = 0.674, $SE = 0.156$, $\beta = 0.476$, $t = 4.33$, $p < 0.001$).

Finally, satisfaction appeared to be a significant predictor of team effectiveness (unstandardized regression coefficient = 0.599, $SE = 0.083$, $\beta = 0.670$, $t = 7.23$, $p < 0.001$). These results suggest a model as depicted in Figure 1.

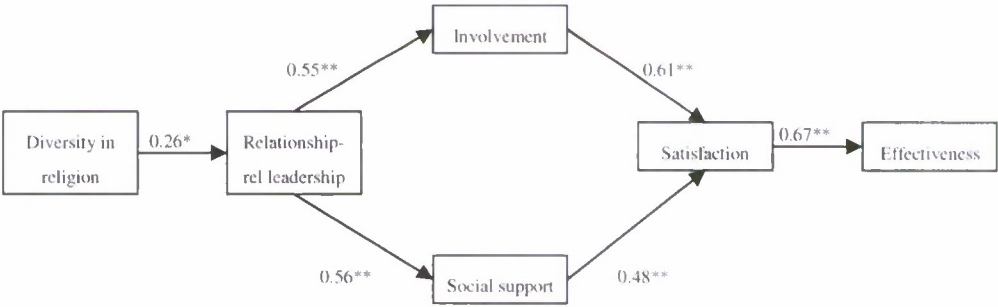


Figure 1 A model of factors explaining the effectiveness of multinational teams.

3.1.3 Mediation Analyses

The model as presented before might raise some questions on other (direct) relations that are not presented in our model. It could be argued, for example, that there could be a direct relationship between diversity in religion and involvement. A regression analysis showed that this is indeed the case.

However, a mediation analysis showed that this effect decreased significantly when controlled for relationship-related leadership. Similarly, the direct effect between diversity in religion and social support decreased significantly when controlled for relationship-related leadership. We conducted a mediation analysis for each mediation that would be possible in our model. The results of these analyses are presented in Table 6. In support of the model, we found that, when controlled for the mediator, all possible direct relationships between dependent variables and independent variables decreased significantly.

Table 6 Mediation Analyses.

Dep. var.	Indep. var.	Mediator	<i>z</i>	<i>p</i>
Diversity in religion	Involvement	Rel-rel leadership	2.74	0.006
Diversity in religion	Social support	Rel-rel leadership	1.98	0.047
Rel-rel leadership	Satisfaction	Involvement	3.35	0.000
Rel-rel leadership	Satisfaction	Social support	2.25	0.020
Involvement	Effectiveness	Satisfaction	3.77	0.000
Social support	Effectiveness	Satisfaction	3.33	0.000

Note. The reported *z*-values represent the Sobel test statistic, which is calculated as $a*b/\text{SQRT}(b^2*s_a^2 + a^2*s_b^2)$, in which *a* = raw (unstandardized) regression coefficient for the association between IV and mediator; *s_a* = standard error of *a*; *b* = raw coefficient for the association between the mediator and the DV (when the IV is also a predictor of the DV); and *s_b* = standard error of *b*. A significant *z*-value means that the initial relationship between the DV and the IV becomes significantly less significant when controlled for the mediator.

4 Discussion

In this study we investigated the effect of cultural diversity on team performance, taking into account different team factors. We found no effects of diversity in nationality or values such as individualism, collectivism, power distance, and uncertainty avoidance on any of the team factors or team outcome. Rather, religious diversity was found to induce relationship-related leadership, which was positively related to involvement and social support; satisfaction and effectiveness were positively related to involvement and social support. We presented a model that shows mediating roles of relationship-related leadership and team factors *involvement* and *social support*.

Our first main finding is that cultural or national diversity has no effect on perceived effectiveness; this finding is inconsistent with studies reporting effects of cultural diversity on team outcomes, in particular on those reporting negative effects [e.g., Thomas, 1999; Van der Zee et al., 2004]. We introduced a new way to conceptualize cultural diversity. By asking respondents to indicate the diversity in their teams in terms of values and in terms of religion we zoomed in on what culture is really about. Instead of merely stating that cultural diversity enhances or decreases team performance, we argue that it is not so much values such as individualism, collectivism, or power distance that matter in a military team, but religious diversity. In addition, our conceptualization of cultural diversity allowed us to circumvent problems related to administration of ethnic and racial data that plague other surveys [see Edwards, Rosenfeld, Booth-Kewley, & Thomas, 1996].

However, religious diversity has a positive effect on effectiveness. A reason for the explanatory power of religious diversity rather than national diversity or cultural diversity could be the dominance of military culture in military teams, which surpasses nation-related values. This notion is supported by Davis (2004) who reported that 'internalization of organization culture reduced the impact of national cultural differences' (p. 52). Thus, members of organizations with a strong corporate culture separate their own national culture from the culture at work. As religious practice has more consequences for daily functioning and could be more difficult to leave at the door when going to work, it is more obvious to team members. Future research should address the nature of this impact of religious diversity. For example, it is yet unclear whether respondents interpreted religious diversity as diversity in religious denomination or as diversity in the level of religiosity in general.

A second important finding was that relationship-related leadership mediates the relation between (religious) diversity and effectiveness. This is in agreement with Bell and Kozlowski (2002) who proposed that leaders of diverse (virtual) teams need to consider team member's orientations and need to attempt relating to world views of all members. Our finding suggests that focus should not be on the level of diversity of a military team but rather on the qualities of the leader. However, more (meta-analytic) studies are needed to examine exactly which team factors mediate and moderate the effect of diversity on outcomes such as performance and effectiveness.

The present study provides a way to measure cultural diversity in a way that goes beyond establishing the number of nationalities in a team. We showed that cultural diversity is not relevant in relation to team effectiveness, but religious diversity is. However, although religious diversity should not be ignored, it can be compensated by leadership styles.

5 References

- Ahronson, A. & Eberman, C. (2002),
Understanding leadership and teams in the military context.
- Allport, G. (1954),
The nature of prejudice,
Reading, MA: Addison-Wesley.
- Amelsfoort, D.J.C. van & Vliet, A.J. van (2004),
The measurement of the influence of cultural differences in team functioning. The development of a questionnaire (Report TM-04-A062),
Soesterberg, Netherlands: TNO Defence, Security and Safety.
- Baron, R.M. & Kenny, D.A. (1986),
The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations,
Journal of Personality and Social Psychology, 51, 1173-1182.
- Bell, B.S. & Kozlowski, S.W.J. (2002),
A typology of virtual teams: Implications for effective leadership,
Group & Organization Management, 27, 14-49.
- Blake, R. & Mouton, J. (1964),
The managerial grid: The key to leadership excellence,
Houston: Gulf Publishing Co.
- Bruin, R. de & Geel, B.A.G. van (2007),
The influence of leadership on perceived cultural differences and team effectiveness within multicultural teams [De invloed van leiderschap op subjectieve culturele verschillen]. Report TNO-DV A259
Soesterberg, Netherlands: TNO Defence, Security and Safety.
- Davis, D.D. (2004),
The Tao of leadership in virtual teams,
Organizational Dynamics, 33, 47-62.
- Early, P.C. & Mosakowski, E. (2000),
Creating hybrid team cultures: An empirical test of transnational team functioning,
Academy of Management Journal, 43, 26-49.
- Edwards, J.E.; Rosenfeld, P.; Booth-Kewley, S. & Thomas, M. D. (1996),
Methodological issues in navy surveys,
Military Psychology, 8, 309-324.
- Hofstede, G. (1980),
Culture's consequences,
Beverly Hills, CA: Sage.
- Hofstede, G. (2001),
Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations,
Thousand Oaks, CA: Sage.
- Knouse, S.B. & Dansby, M.R. (1999),
Percentage of work-group diversity and work-group effectiveness,
The Journal of Psychology, 133, 486-494.

- Moelker, R.; Soeters, J. & Vom Hagen, U. (2007),
Sympathy, the cement of interoperability: Findings on ten years of German-Netherlands
military cooperation,
Armed Forces & Society, 33, 496-517.
- Oliver, L.W.; Harman, J.; Hoover, E.; Hayes, S. M. & Pandhi, N.A. (1999),
A quantitative integration of the military cohesion literature,
Military Psychology, 11, 57-83.
- Shiraev, E. & Levy, D. (2007),
Cross-cultural psychology: Critical thinking and contemporary applications (Third Edition),
Boston, MA: Pearson Education.
- Smith, P.C.; Kendall, L.M. & Hulin, C.L. (1969),
The measurement of satisfaction in work and retirement,
Chicago: Rand McNally.
- Spector, P.E. (1997),
Job satisfaction. Application, assessment, causes and consequences,
Thousand Oaks, CA: Sage.
- Tajfel, H. & Turner, J. (1979),
An integrative theory of intergroup conflict,
In W. G. Austin, & S. Worchel (Eds.),
The Social Psychology of Intergroup Relations (pp. 94-109),
Monterey, CA: Brooks-Cole.
- Thomas, D.C. (1999),
Cultural diversity and work group effectiveness: An experimental study,
Journal of Cross-Cultural Psychology, 30, 242-263.
- Vecchio, R.P. & Brazil, D.M. (2007),
Leadership and sex-similarity: A comparison in a military setting,
Persomel Psychology, 60, 303-335.
- Watson, W.E.; Johnson, L. & Zgourides, G.D. (2002),
The influence of ethnic diversity on leadership, group process, and performance:
An examination of learning teams,
International Journal of Intercultural Relations, 26, 1-16.
- Watson, W.E.; Kumar, K. & Michaelsen, L.K. (1993),
Cultural diversity's impact on interaction process and performance: Comparing
homogeneous and diverse taks groups,
Academy of Management Journal, 36, 590-602.
- Wech, B.A.; Mossholder, K.W.; Steel, R.P. & Bennett, N. (1998),
Does work group cohesiveness affect individuals' performance and organizational
commitment? A cross-level examination,
Small Group Research, 29, 472-495.
- Wetzer, I.M.; Zeelenberg, M. & Pieters, R. (2007),
'Never eat in that restaurant, I did!'
Psychology & Marketing, 24, 661-680.
- Zee, K. van de; Atsma, N. & Brodbeck, F. (2004),
The influence of social identity and personality on outcomes of cultural diversity in teams,
Journal of Cross-Cultural Psychology, 35, 283-303.

6 Signature

Soesterberg, December 2008

A handwritten signature in black ink, consisting of a large, stylized 'R' followed by a horizontal line and a small flourish.

Dr P.C. Rasker
Head of department

TNO Defence, Security and Safety

A handwritten signature in blue ink, featuring a large, stylized 'W' followed by a horizontal line and a small flourish.

Dr I.M. Wetzer
Author

ONGERUBRICEERD
REPORT DOCUMENTATION PAGE
(MOD-NL)

1. DEFENCE REPORT NO (MOD-NL) TD2008-0229	2. RECIPIENT'S ACCESSION NO -	3. PERFORMING ORGANIZATION REPORT NO TNO-DV 2008 A513
4. PROJECT/TASK/WORK UNIT NO 032.13401	5. CONTRACT NO -	6. REPORT DATE December 2008
7. NUMBER OF PAGES 20 (excl RDP & distribution list)	8. NUMBER OF REFERENCES 26	9. TYPE OF REPORT AND DATES COVERED Final
10. TITLE AND SUBTITLE Cultural diversity in military teams: Which factors influence effectiveness?		
11. AUTHOR(S) Dr I.M. Wetzer & D.A. van Hemert		
12. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) TNO Defence, Security and Safety, P.O. Box 23, 3769 ZG Soesterberg, The Netherlands Kampweg 5, Soesterberg, The Netherlands		
13. SPONSORING AGENCY NAME(S) AND ADDRESS(ES) Dutch Ministry of Defence, P.O. Box 20701, 2500 ES, The Hague, The Netherlands		
14. SUPPLEMENTARY NOTES The classification designation Ongerubriceerd is equivalent to Unclassified, Stg. Confidentieel is equivalent to Confidential and Stg. Geheim is equivalent to Secret.		
15. ABSTRACT (MAXIMUM 200 WORDS (1044 BYTE)) Purpose: To investigate whether cultural diversity in military teams enhances or decreases team effectiveness, taking into account different measures of cultural diversity, and controlling for team factors such as leadership, involvement and social support. Methods: Military (N = 89) who were currently deployed in a multinational team completed an online questionnaire. Results: The impact of cultural diversity on team effectiveness is very small. Different aspects of cultural diversity (e.g., differences in norms and values, or diversity in nationalities) do not affect team effectiveness. The only aspect of cultural diversity that influenced team effectiveness is diversity in religion. This effect disappears however, when controlled for relationship-related leadership and the team factors involvement and social support. Conclusions: Cultural diversity only plays a minor role in explaining team effectiveness. More important are team factors.		
16. DESCRIPTORS Military teams, leadership, team effectiveness, culture, cultural diversity, team factors		IDENTIFIERS Military teams, leadership, team effectiveness, culture, cultural diversity, team factors
17a. SECURITY CLASSIFICATION (OF REPORT) Ongerubriceerd	17b. SECURITY CLASSIFICATION (OF PAGE) Ongerubriceerd	17c. SECURITY CLASSIFICATION (OF ABSTRACT) Ongerubriceerd
18. DISTRIBUTION AVAILABILITY STATEMENT Unlimited Distribution		17d. SECURITY CLASSIFICATION (OF TITLES) Ongerubriceerd

ONGERUBRICEERD

Distribution list

The following agencies/people will receive a complete copy of the report.

- | | |
|-------|---|
| 1 | DMO/SC-DR&D
standaard inclusief digitale versie bijgeleverd op cd-rom |
| 2/3 | DMO/DR&D/Kennistransfer |
| 4 | Programmabegeleider Defensie
Mindef/DMO/Directie Beleid/Defensie Research and Development
ir. P.J. Keuning |
| 5 | Projectbegeleider Defensie
Mindef/CDC/Gedragwetenschappen
drs. A. Pieterse |
| 6/8 | Bibliotheek KMA |
| 9 | Programmaleider TNO Defensie en Veiligheid
dr. E. Bleeker |
| 10/11 | TNO Defensie en Veiligheid, vestiging Soesterberg,
(Archief) |
| 12 | Mindef/CDC/NLDA/Koninklijke Militaire Academie (KMA)
prof.dr. J. Soeters |
| 13/18 | TNO Defensie en Veiligheid, vestiging Soesterberg,
dr. P. C. Rasker
dr. I. M. Wetzer (3)
dr. D. A. van Hemert
dr. A. J. van Vliet |

The following agencies/people will receive the management summary and the distribution list of the report.

- 4 ex. DMO/SC-DR&D
- 1 ex. DMO/ressort Zeesystemen
- 1 ex. DMO/ressort Landsystemen
- 1 ex. DMO/ressort Luchtsystemen
- 2 ex. BS/DS/DOBBP/SCOB
- 1 ex. MIVD/AAR/BMT
- 1 ex. Staf CZSK
- 1 ex. Staf CLAS
- 1 ex. Staf CLSK
- 1 ex. Staf KMar
- 1 ex. TNO Defensie en Veiligheid, Algemeen Directeur,
ing. J.V. Elsendoorn
- 1 ex. TNO Defensie en Veiligheid, Directie
Directeur Operaties, drs. H.J. Vink
- 1 ex. TNO Defensie en Veiligheid, Directie
Directeur Kennis, prof. dr. P. Werkhoven
- 1 ex. TNO Defensie en Veiligheid, Directie
Directeur Markt, G.D. Klein Baltink
- 1 ex. TNO Defensie en Veiligheid, vestiging Den Haag,
Manager Waarnemingssystemen (operaties), ir. B. Dunnebier PDeng
- 1 ex. TNO Defensie en Veiligheid, vestiging Den Haag,
Manager Informatie en Operaties (operaties), ir. P. Schulein
- 1 ex. TNO Defensie en Veiligheid, vestiging Rijswijk,
Manager Bescherming, Munitie en Wapens (operaties), ir. P.J.M. Elands
- 1 ex. TNO Defensie en Veiligheid, vestiging Rijswijk,
Manager BC Bescherming (operaties), ir. R.J.A. Kersten
- 1 ex. TNO Defensie en Veiligheid, vestiging Soesterberg,
Manager Human Factors (operaties), ir. C.E. Krist-Spit